City of Bismarck, North Dakota

Utility Cost of Service & Rate Design Study -

Community Stakeholder Meeting

Stantec

This is the beginning not the end…

What Today is All About:

Share information about the utility industry, rate concepts & strategies

Compare City's practices to others in the region

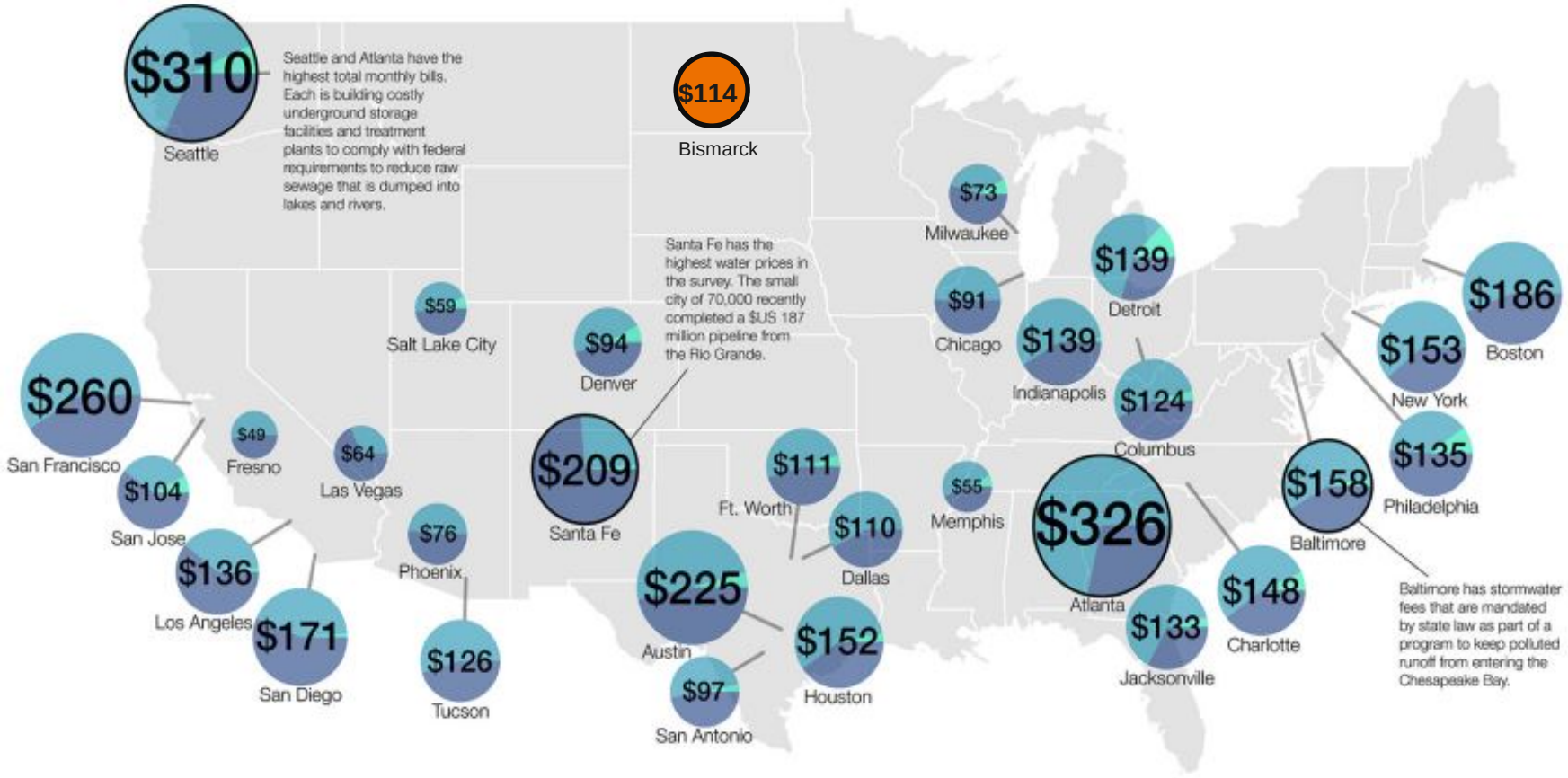
Receive questions, input, concerns, ideas from stakeholders

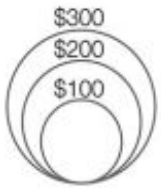
Concepts presented herein should NOT be taken as recommendations!

Agenda

- Water Resources Industry Overview
- Approach to Rate Studies
- Summary of Local Rate Structures
- Funding Strategies
- Questions and Answers

Water Resources Industry Overview





Water prices pay for treating, pumping, and delivering water, while sewer prices cover the cost of cleansing the water that goes down the drain.

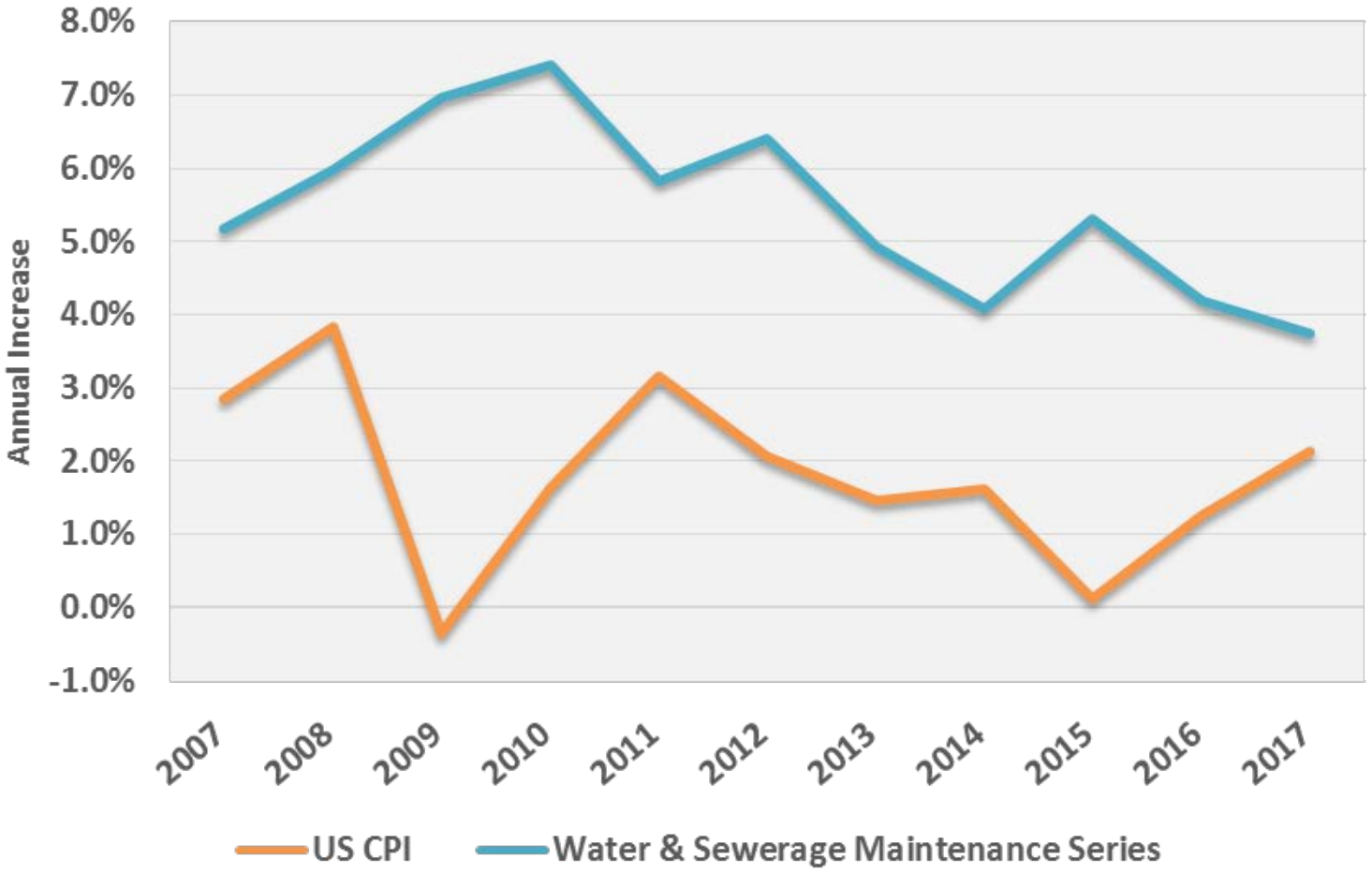
Sewer prices are often higher than water prices because more energy and chemicals are required for treatment. Following the Clean Water Act, the federal government gave grants for new treatment plants during the 1970s and 1980s. Over the past three decades, however, new spending has been cut for local sewer infrastructure.

Stormwater fees are not included in every city's monthly bill. Some cities use general tax revenues to pay for projects to reduce polluted runoff from streets and parking lots. However, these projects must then compete for funds with other departments like police and schools.

Rates current as of April 1, 2015.
Monthly bill calculated for a family of four using 100 gallons per person per day.
Source: Circle of Blue research, based on utility water rates.

circle of blue

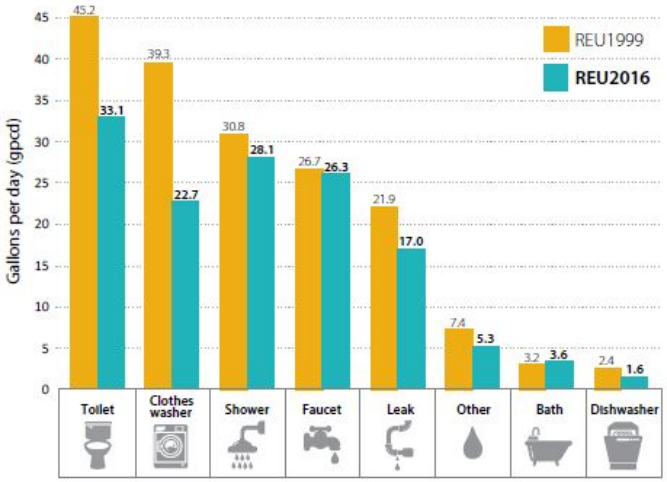
Overall CPI vs. Water/Sewerage CPI



Industry Overview

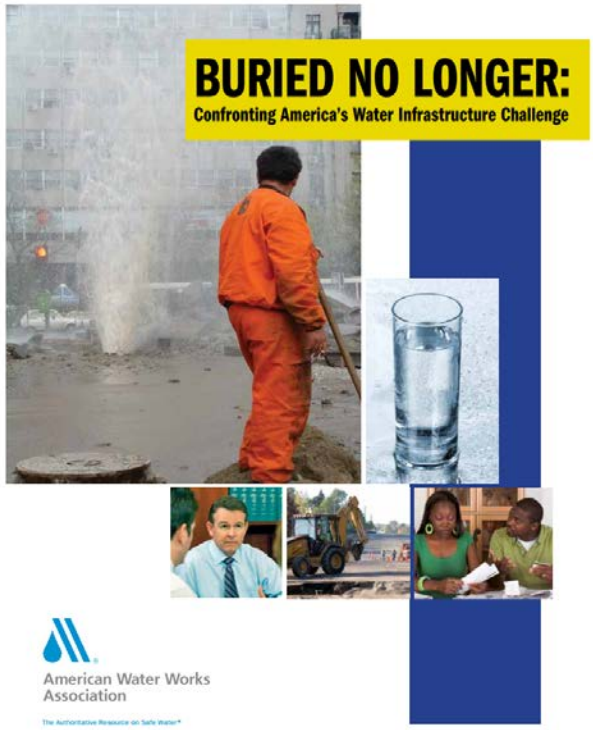
The common drivers of rate increases

Continued Reductions in Water Use

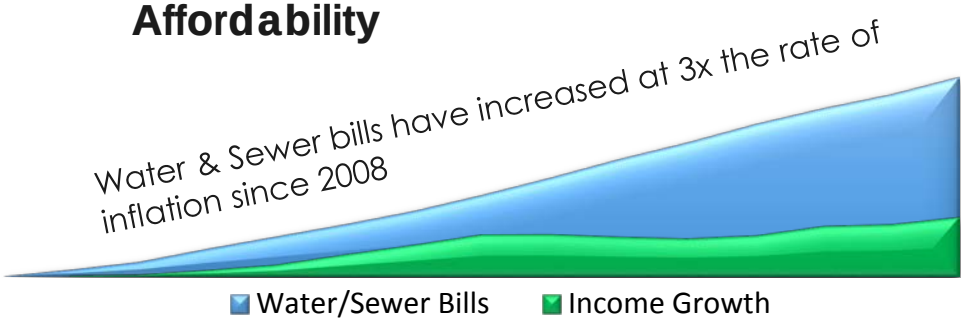


22%
DECREASE PER HOUSEHOLD
DAILY WATER USE
1999 TO 2016

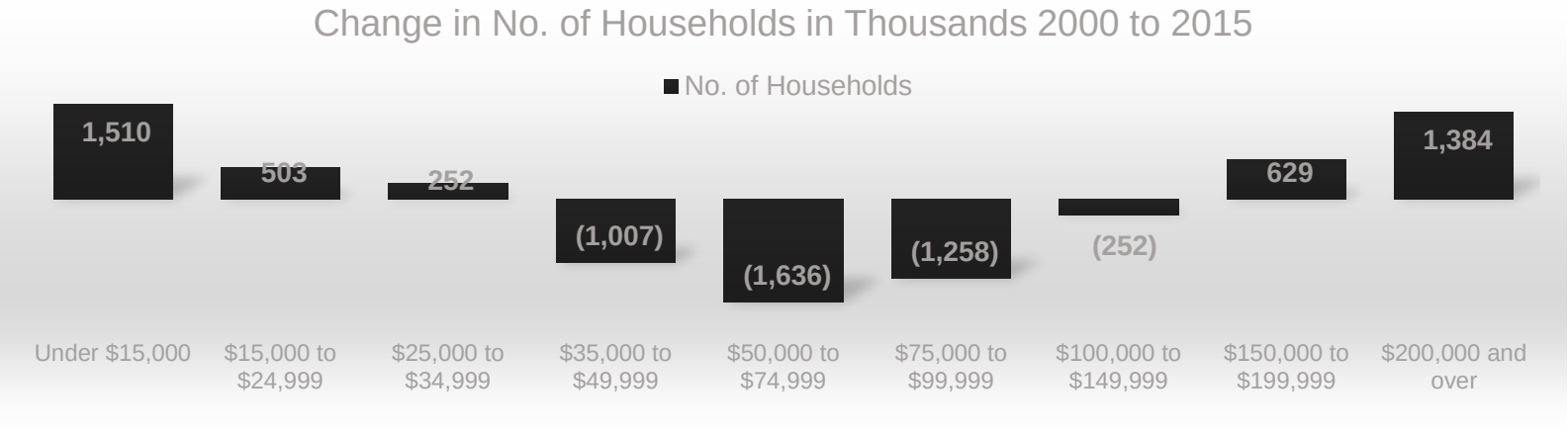
Infrastructure Reinvestment Needs

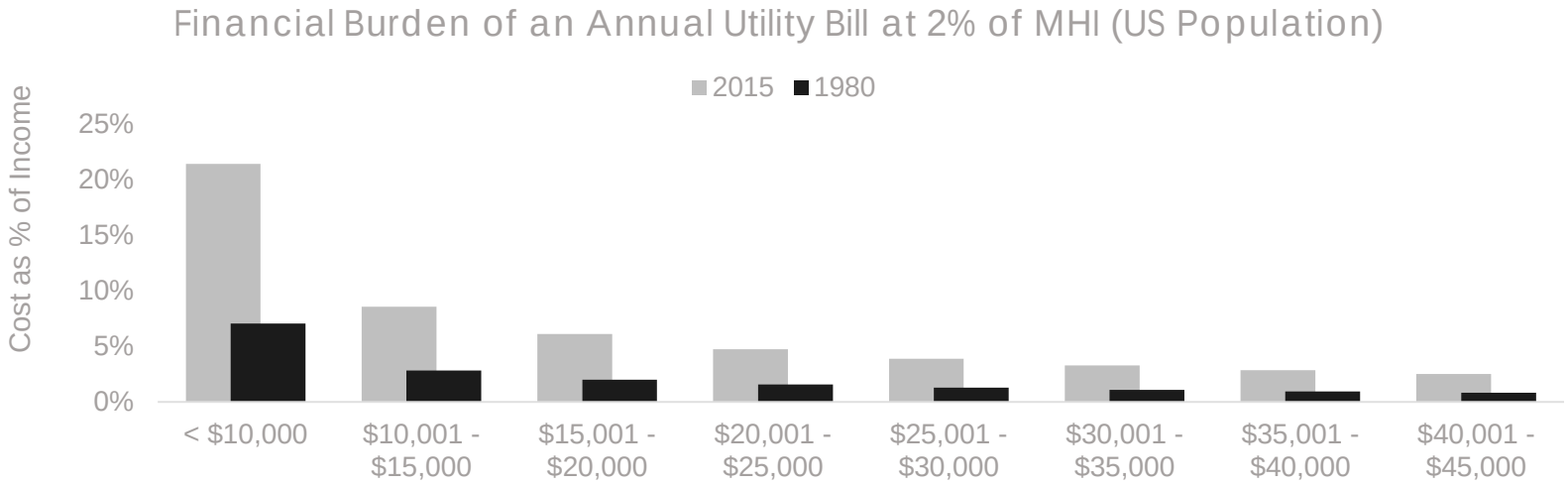


Affordability

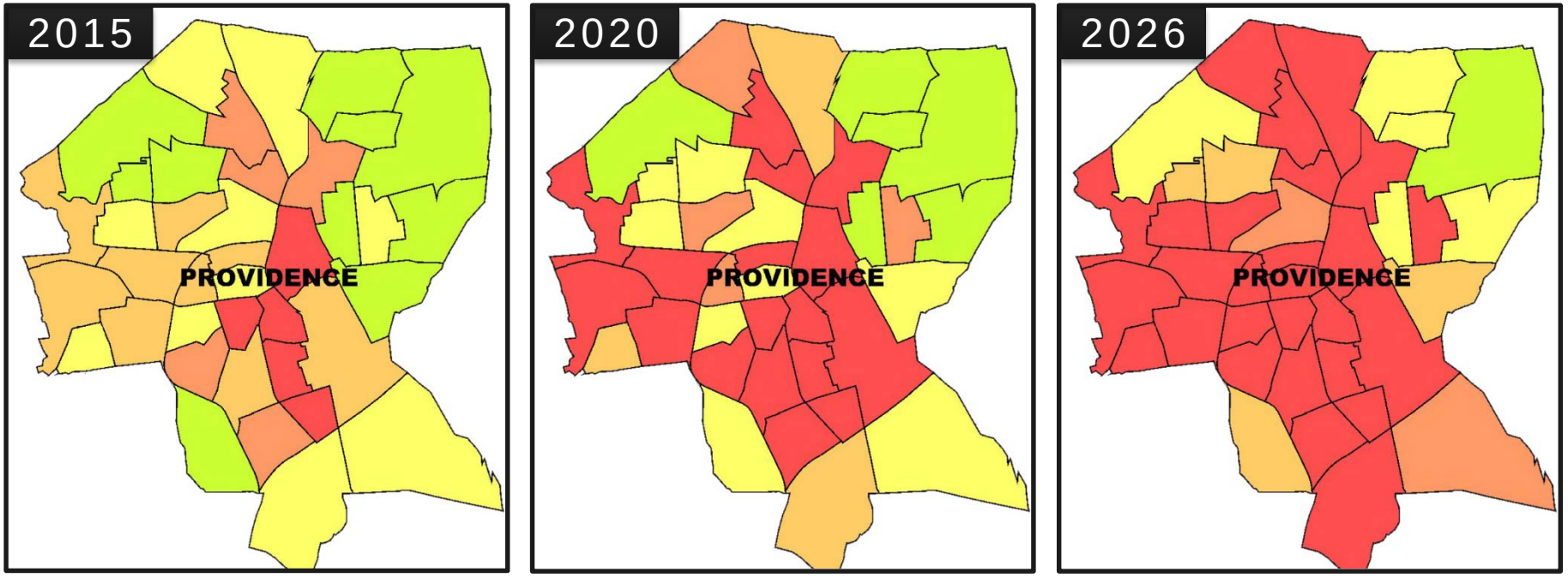


Financial burdens pronounced for growing number of lower-income households



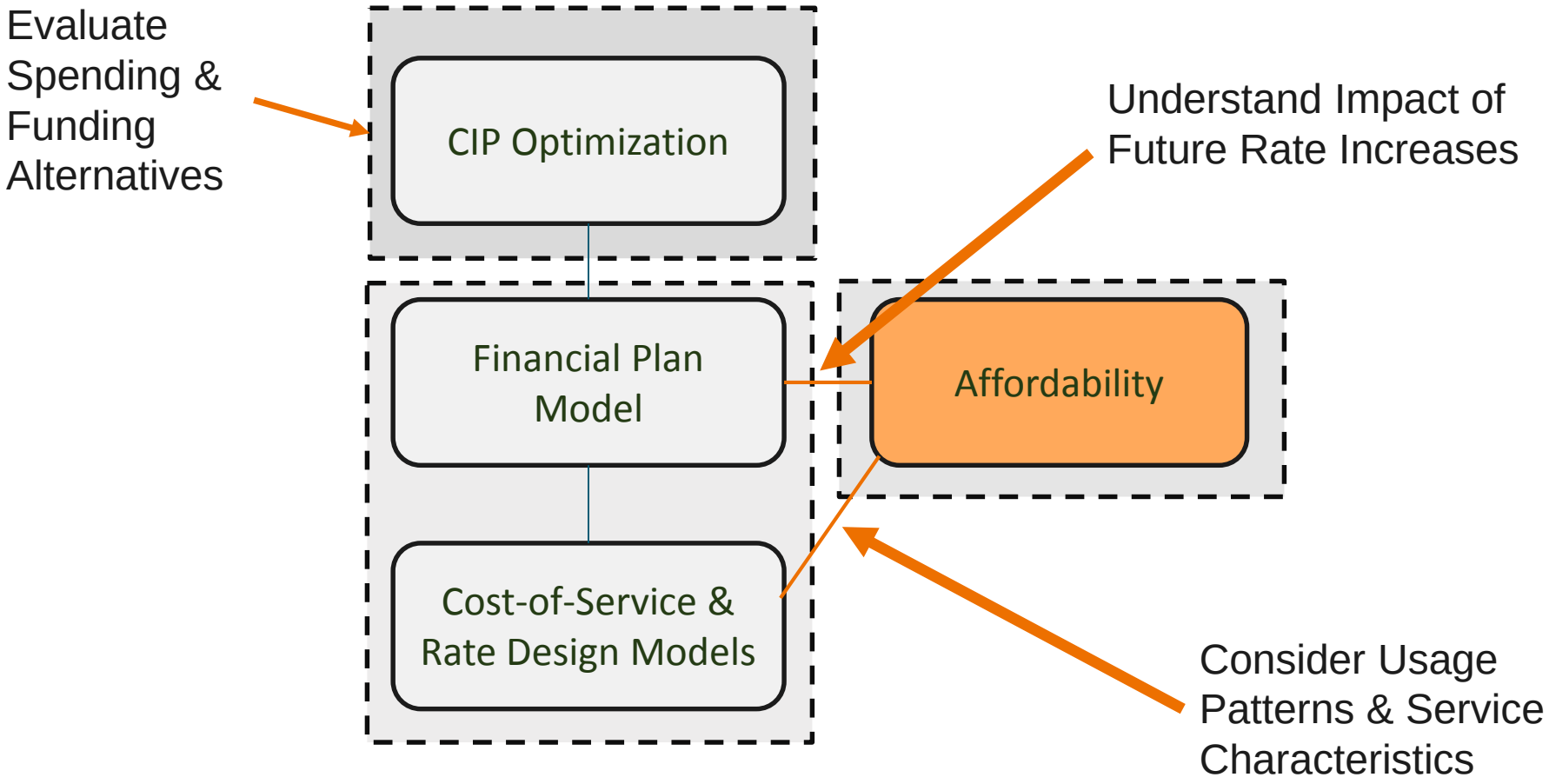


More than median income alone is being used to understand affordability

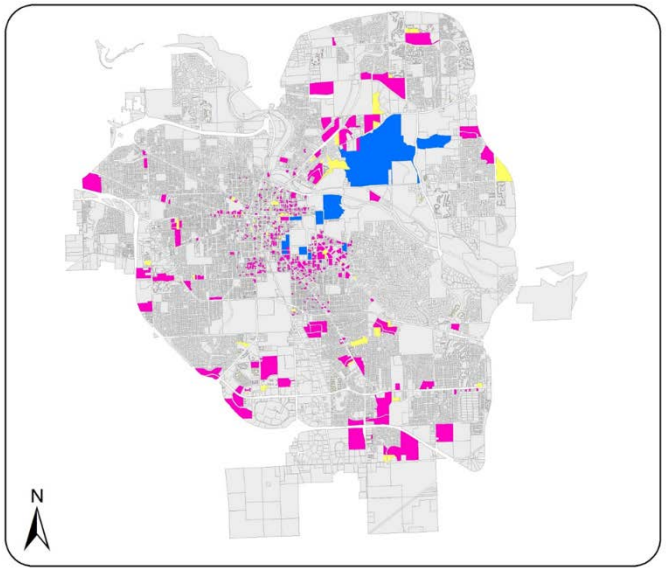


Maps present actual water/sewer bills as a percentage of income in each census tract. Green = Water/sewer bill that is affordable; Red = Water/sewer bill that is unaffordable. With detailed data and graphics like this, communities are able to better understand and communicate affordability. **More importantly they are using the data to inform system spending, target assistance programs, allocate costs, and even set rates.**

Trend is integrating affordability into the capital planning and rate setting process

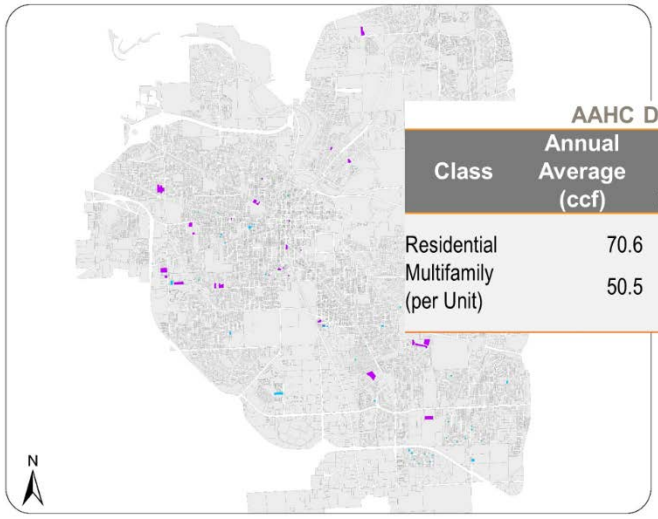


Utilities have better data than ever before, and aren't afraid to use it!



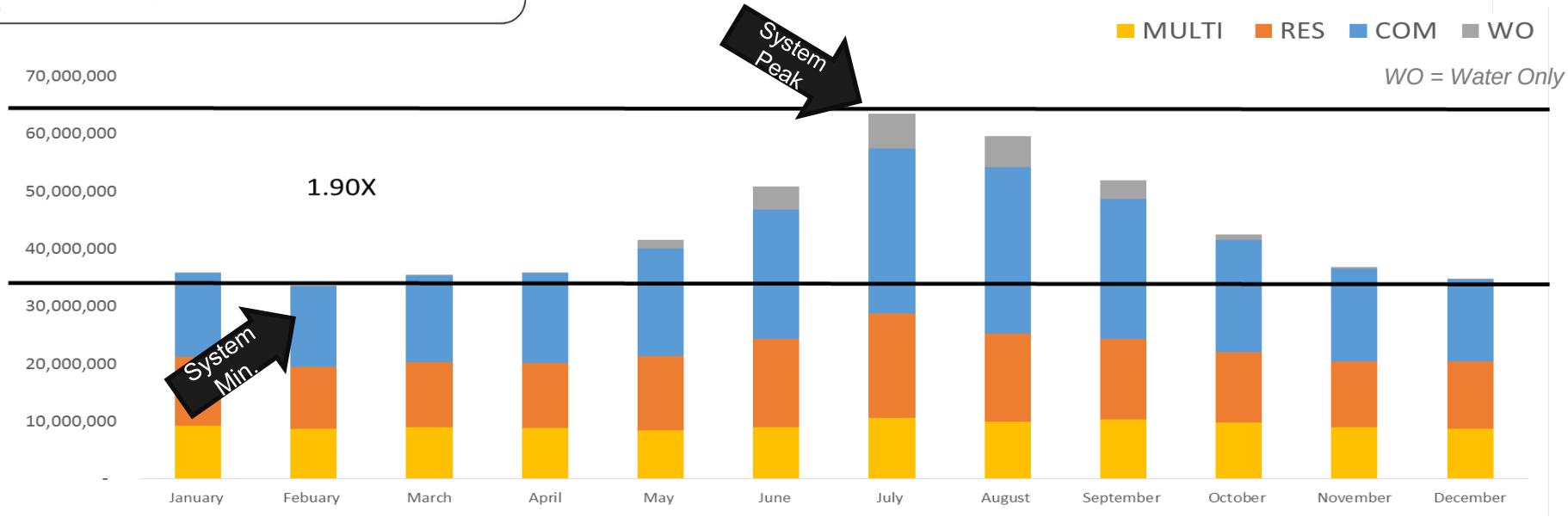
MF Parcels from TRAKiT
MF Parcels from UofM
MF Parcels from Overlay

MF = Multifamily



Class	AAHC Data: Annual Average (ccf)	AAHC Data: Peak Day Factor	System-wide: Annual Average (ccf)	System-wide: Peak Day Factor
Residential	70.6	1.30x	61.2	1.52x
Multifamily (per Unit)	50.5	1.29x	48.6	1.23x

AAHC = Ann Arbor Housing Commission



WO = Water Only

Approach to Rate Studies

Core steps of utility ratemaking process

Fundamental Components

1. Revenue Requirement
2. Cost of Service
3. Rate Design
4. Communication!

Revenue Requirement Analysis: Compares revenues to operating & capital costs to determine adequacy of existing rates

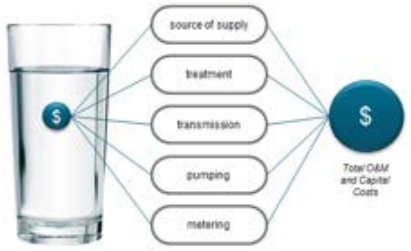
Cost of Service Analysis: Allocates the revenue requirements of the system to customers in a fair and equitable manner

Rate Design Analysis: Considers the level and structure of rates that will collect revenue requirements from each customer class

Communication: Explains the status quo, key issues/objectives, drivers of changes, and comparisons to local and national trends

Approach to
Rate Studies

Consider efficiency and needs: May not need to perform all steps each year

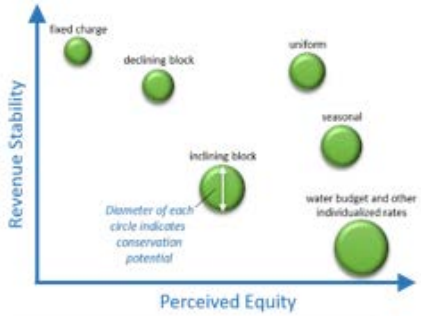


Revenue Requirements

- Operating Costs
- Capital Costs
- Financial Policies
  - Debt Coverage
  - Reserves

Cost Allocation

- Evaluate Available Data
- Establish Classes
- Identify Methodology
- Compare Results to Current Revenue



Rate Design

- Evaluate Objectives
- Identify Structures
- Set Parameters
- Customer Impacts

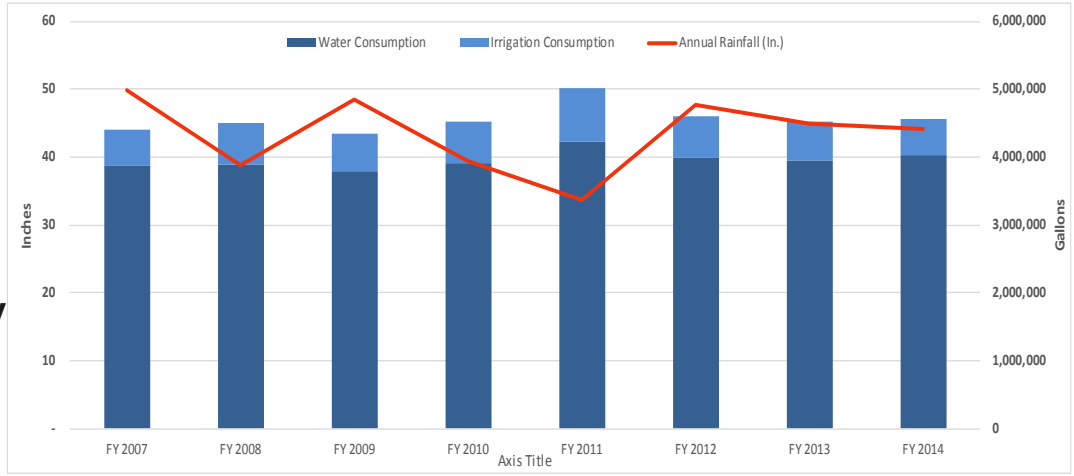
Communication

- Explain Process/Data
- Adjustment Drivers
- National Trends
- Local Practices

Key consideration: changes in water use

Essential to ensure sustainability

- **Review multiple years of data:**
  - Water use and population
  - Economic data, rainfall, rate changes…
- **Model population & use/acct. separately**
- **Include price elasticity in forecasts**
- **Compare actual results to projections**



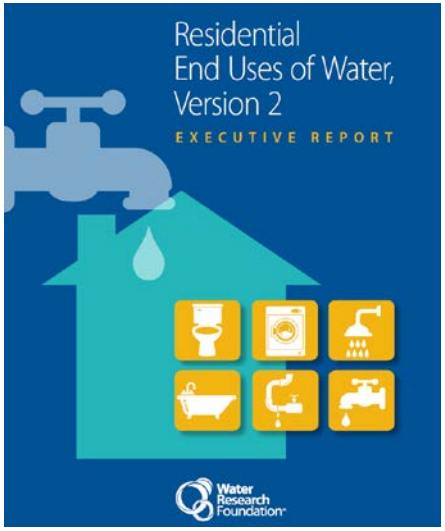
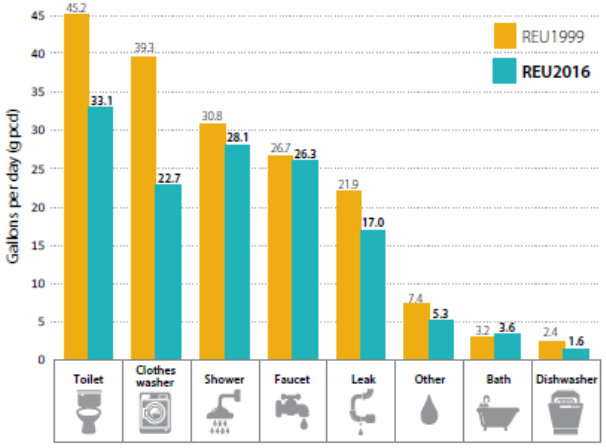


Figure 4. Average daily indoor per household water use REU1999 and REU2016



22%
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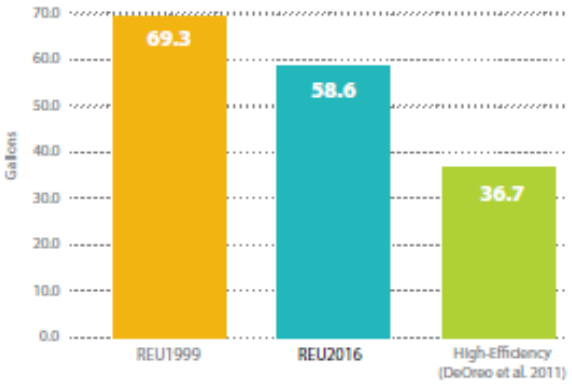
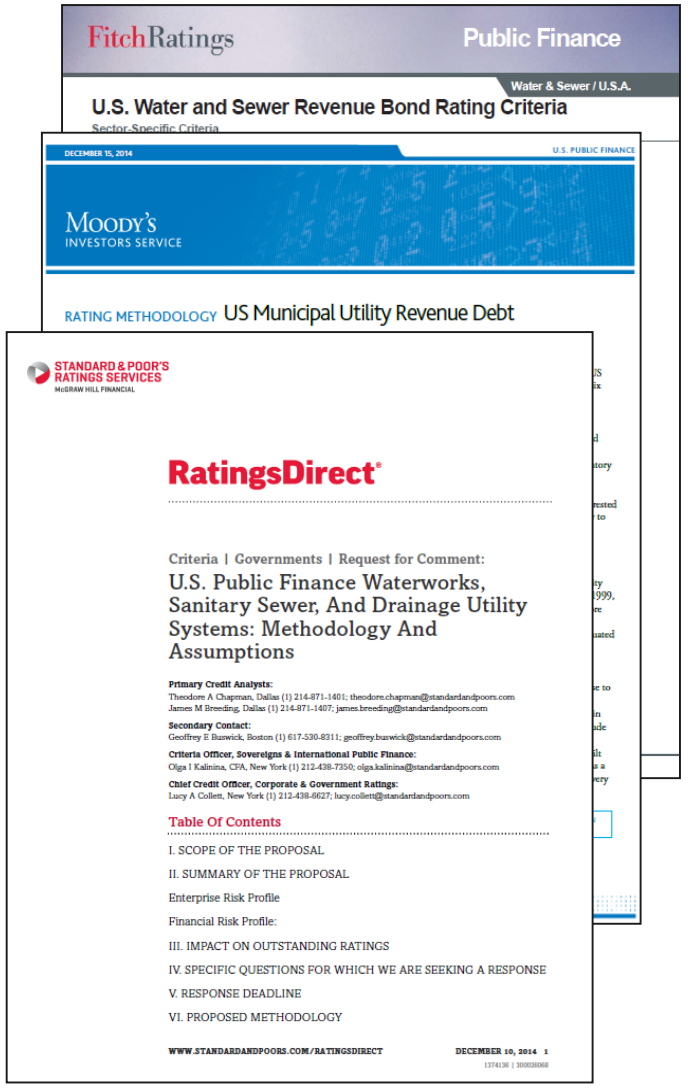
1999 TO 2016

Figure 7. Indoor average gallons per capita per day, REU1999, REU2016, High Efficiency Studies



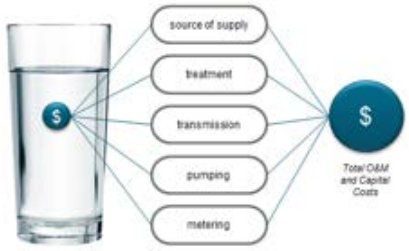
Key consideration: reserve policies

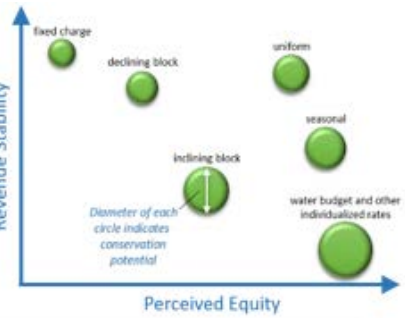
- ✓ General rules of thumb for reserves are provided by industry groups like AWWA:
  - Operating reserve equal >= 2 months of O&M
  - Capital reserve equal to the average annual cash funded CIP over the next 3 to 5 years
- ✓ Also, rating agencies publish criteria relative to reserves that they use to evaluate the creditworthiness of utilities
  - Days of free cash (strong systems >= 365 days)
- ✓ Reserve levels should be established considering risk from rates and weather:
  - Use of water conservation rates = more risk
  - Lower fixed charges = more risk
  - Exposure to drought conditions = more risk
- ✓ **Result:** Operating, Capital, and Rate Stabilization Reserve Considerations



Approach to Rate Studies

Understanding cost allocation is important in selecting rate structures and setting rates





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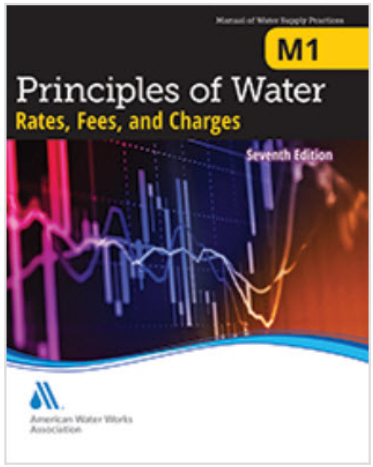
Use industry resources **(as guidance)**

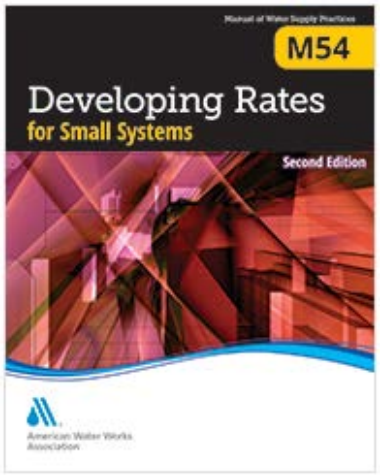
AWWA Manual M-1

- Costs allocated to functions and then to users in proportion to contributions to system components
- Resource intensive (large systems)



AWWA Manual M-54

- Uses billing data, such as meter size and flow, to establish rate structures that more generally apportion costs to customers
- Intended for systems with less granular data/resources

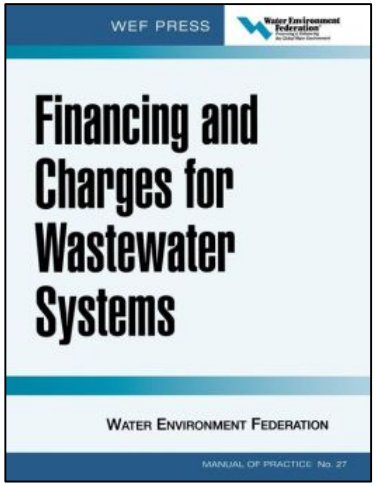


WEF Stormwater User Fee Programs

- Identifies general types of rate structures and legal framework
- Relatively new
- “High-level”

WEF MOP #27

- Similar to Manual M-1 in level of detail and cost allocation process
- Relies upon strength & flow
- Used by many communities



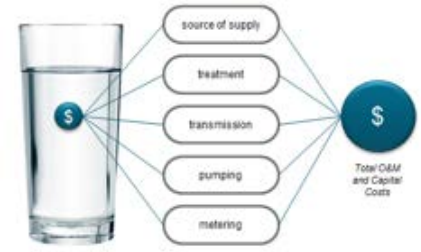
Approach to Rate Studies

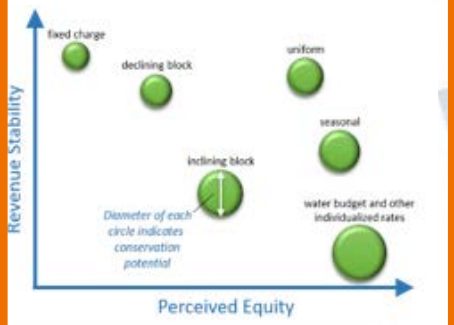
Goal: determine equitable distribution of revenue to be recovered by customer class

- ✓ Apply method best suited for data, conditions & goals
- ✓ Allocate costs to functions & then to customer classes
- ✓ Establish required revenue to collect from each class
  - ✓ Orange = Current revenue
  - ✓ Blue = Annual cost of serve
  - ✓ Variance = Difference

Approach to Rate Studies

Consider objectives in selecting rate structures for different customer classes





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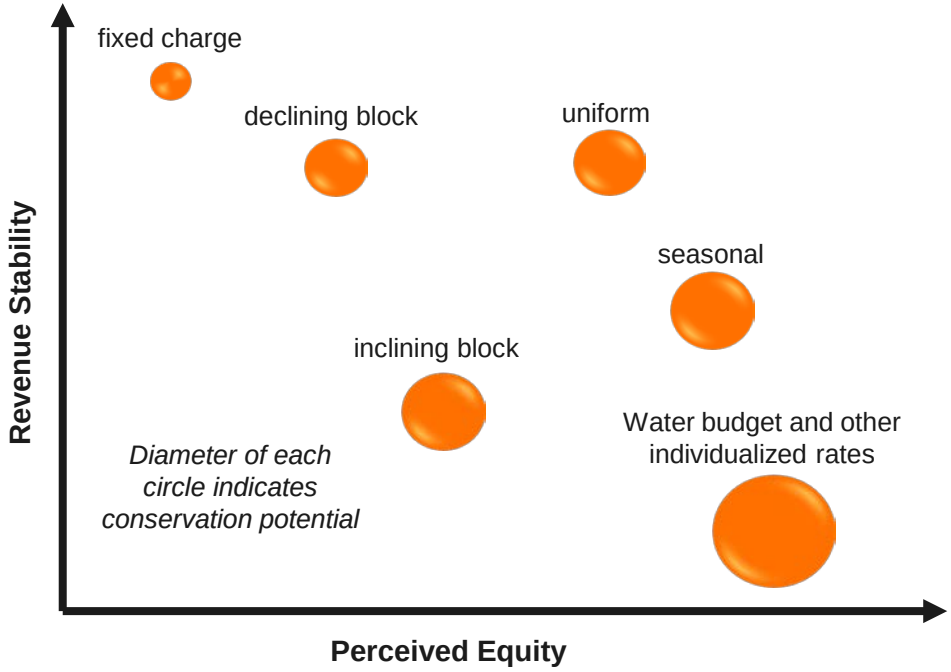
Selecting the right rate structure

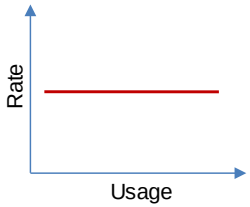
- ✓ **Identify structure that meets your needs:**
  - Conforms to industry practice
  - Meets all legal requirements
  - Easy to administer/understand
  - Elasticity of demand & weather
  - Conservation and affordability
  - Availability of data/technology
  - Stakeholder input/concerns



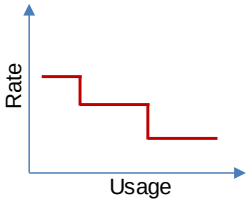
- ✓ **Critical considerations:**
  - Understanding distribution of system costs
  - Integrating financial considerations
    - Reserve policies & revenue stability

Common water rate structures

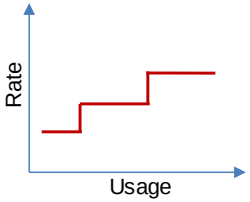
- Uniform Rate
  - Same rate regardless of usage



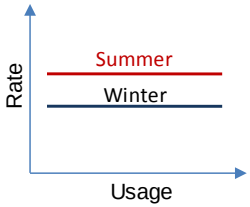
- Declining Block
  - Rate decreases for higher levels of usage



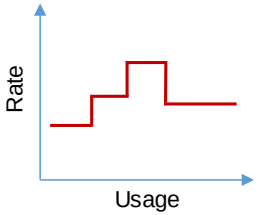
- Inclining Block
  - Rate increases for higher levels of usage



- Seasonal
  - Higher rates in peak times of year



- Increasing/Decreasing
  - Rate increases then decreases with higher usage



US Water Rate Structures

Source: AWWA 2016 Water & Wastewater Rate Survey

Chart V-19A. US Water Rate Structures, Residential

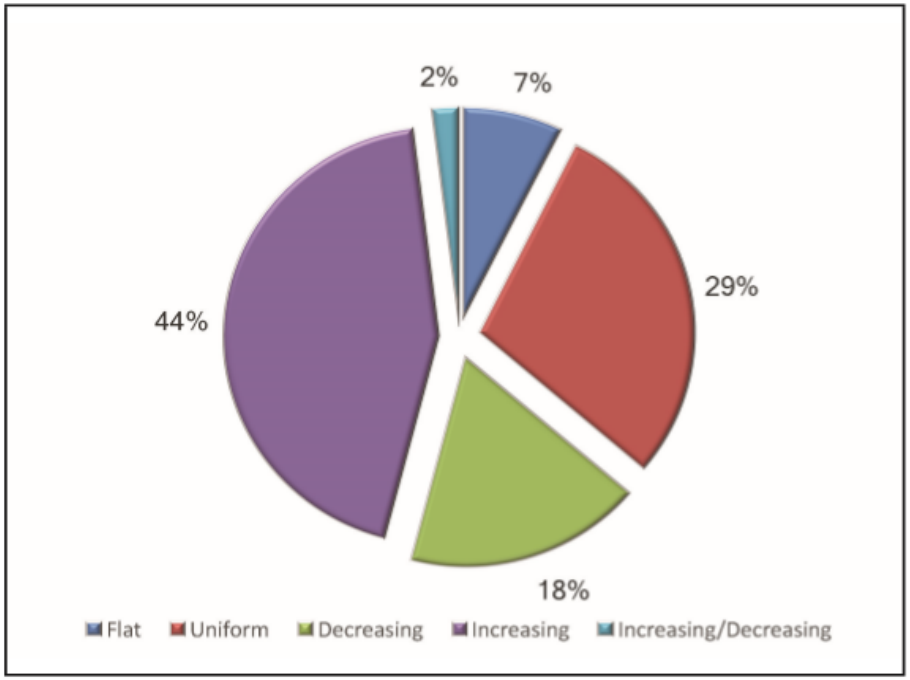
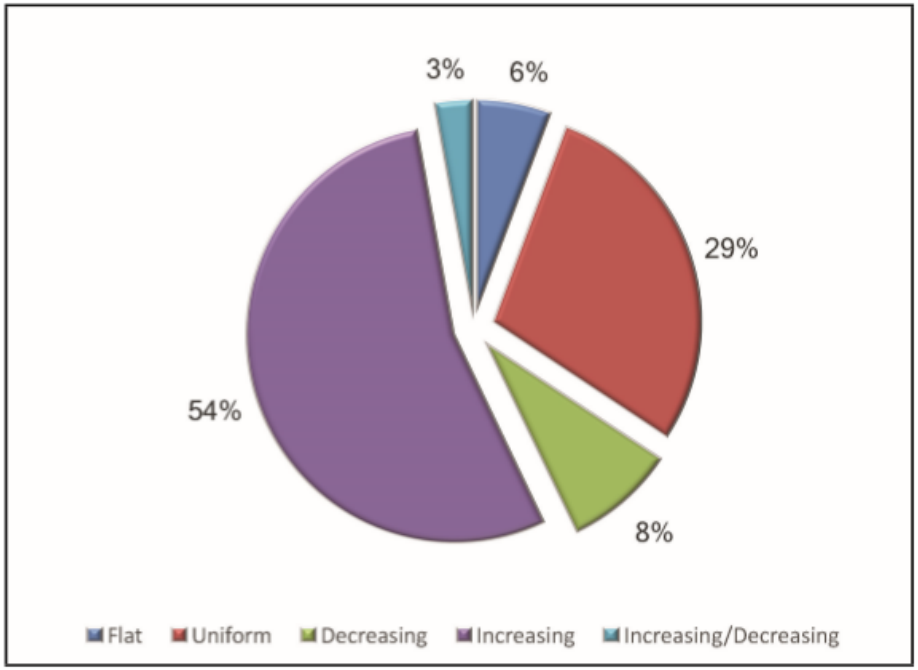


Chart V-19B. US Water Rate Structures, Nonresidential



US Wastewater Rate Structures

Source: AWWA 2016 Water & Wastewater Rate Survey

Chart V-20A. US Wastewater Rate Structures, Residential

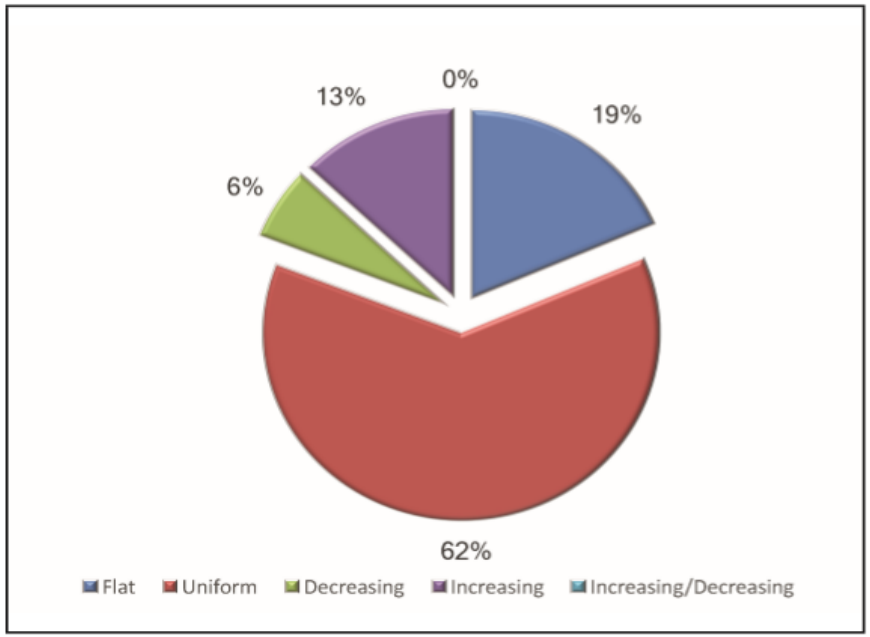
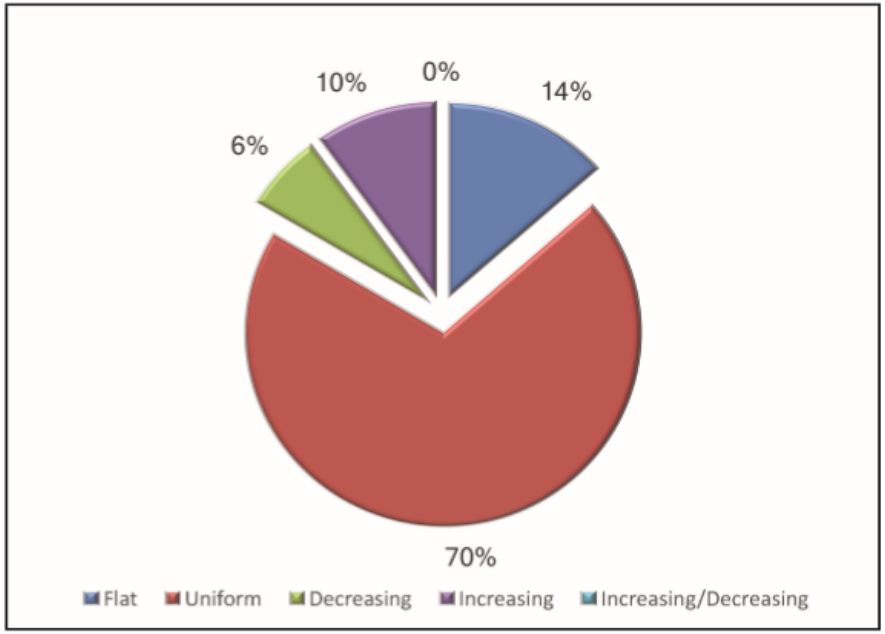
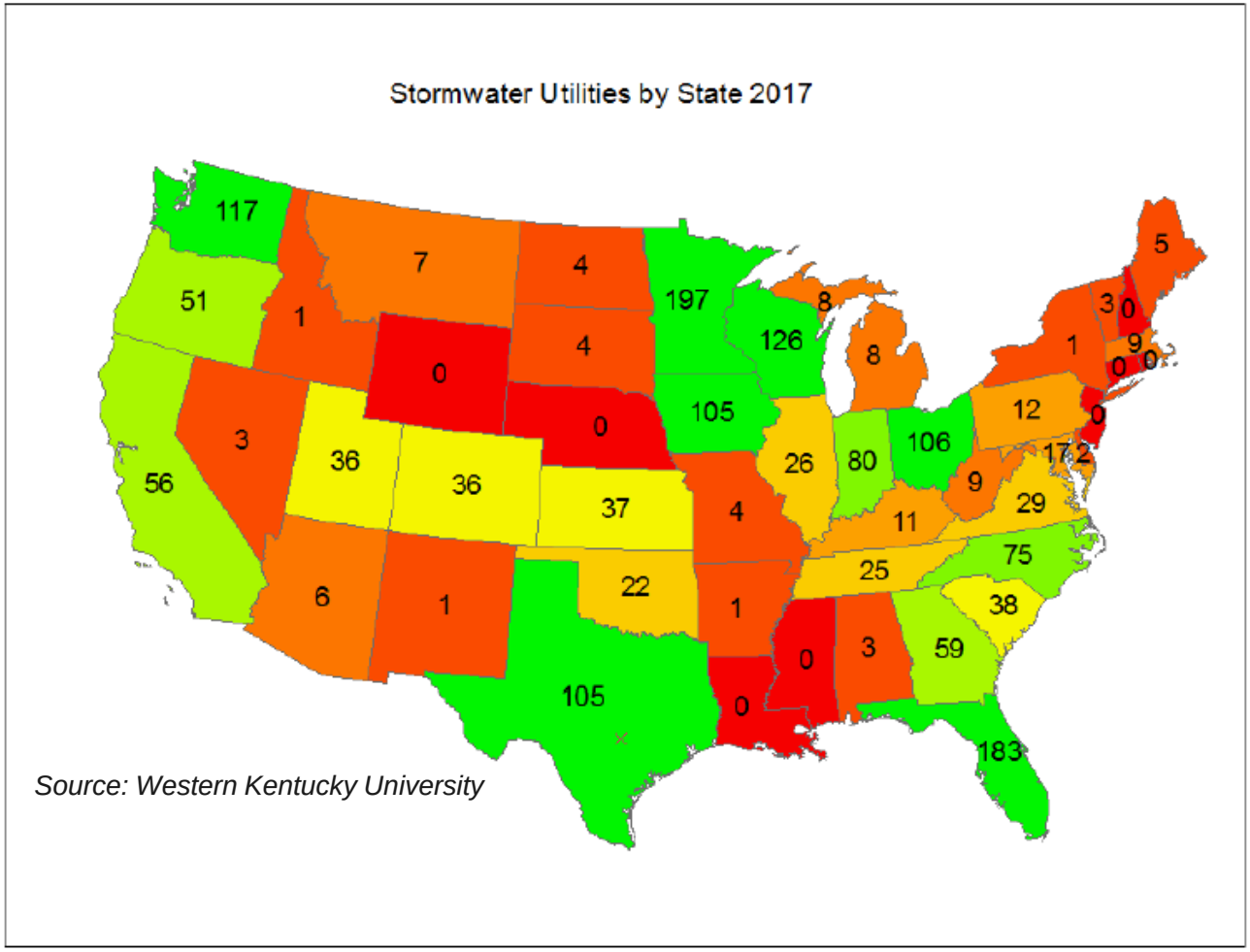


Chart V-20B. US Wastewater Rate Structures, Nonresidential



Stormwater utilities by state



Source: Western Kentucky University

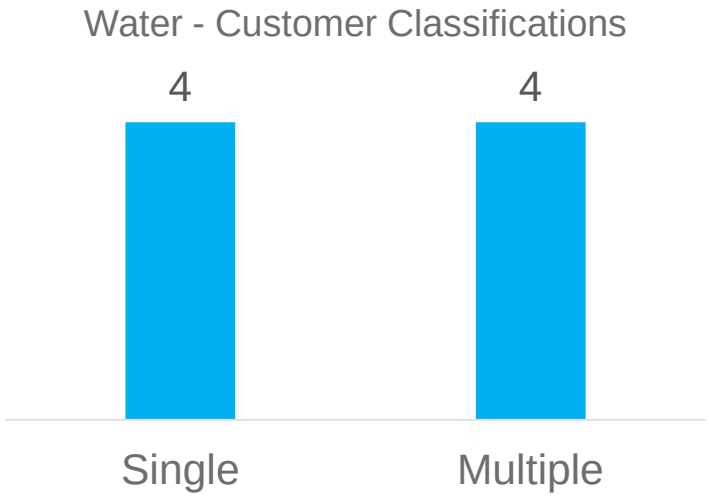
- Significant growth in number of stormwater utilities and user fees
- Fees typically based on:
  - Impervious Area
  - Gross Parcel Size
  - Intensity of Development
  - Accounts/Parcels

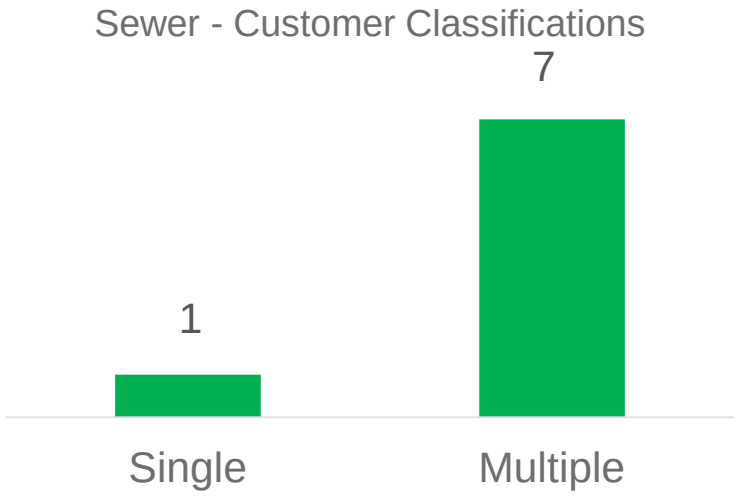
Summary of Local Rate Structures

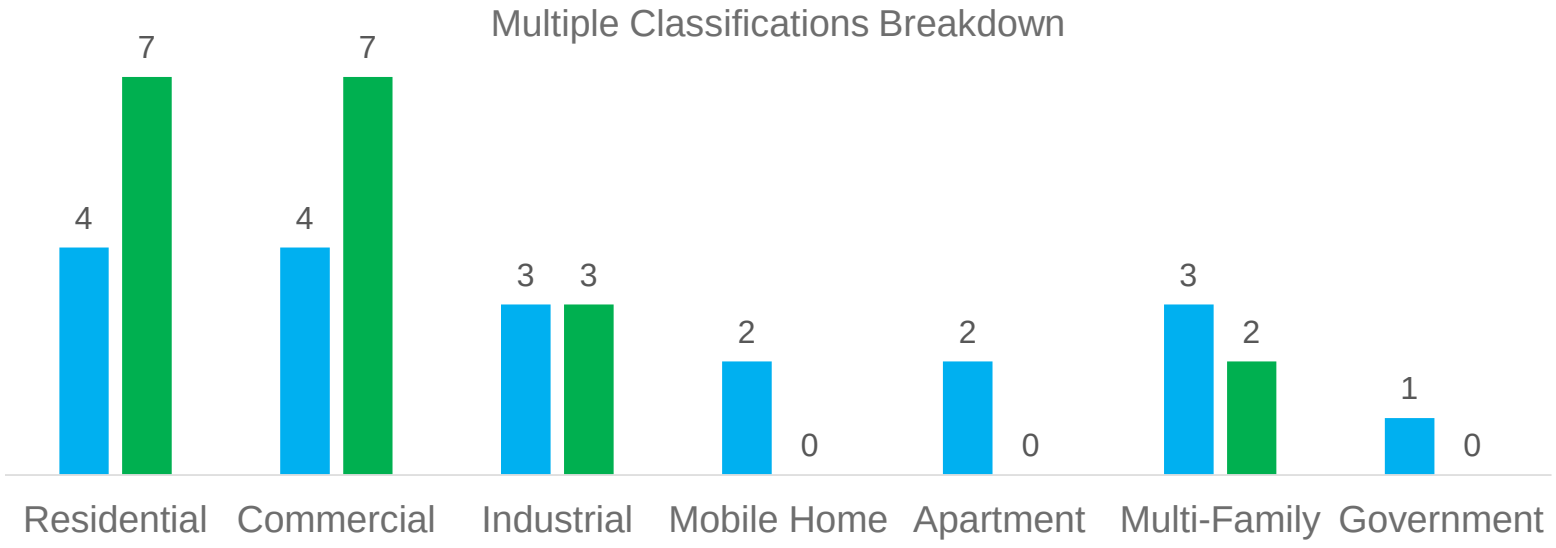
Summary of Local Rates

Customer classes in North Dakota

(West Fargo, Mandan, Williston, Bismarck, Minot, Dickinson, Fargo & Grand Forks)







Summary of Local Rates

Water and Sewer Fixed Charges

What Costs to Recover

-Meter Reading
- Billing & Collection
-Customer Service
-Debt Service
-Other

Higher the fixed charge the greater the revenue stability

Higher the fixed charge the more expensive service is for smallest user

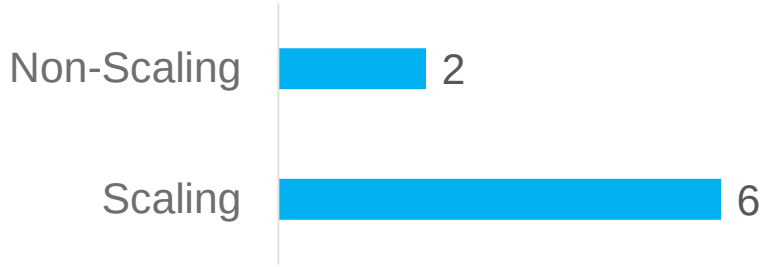
Basis for Applying the Charge

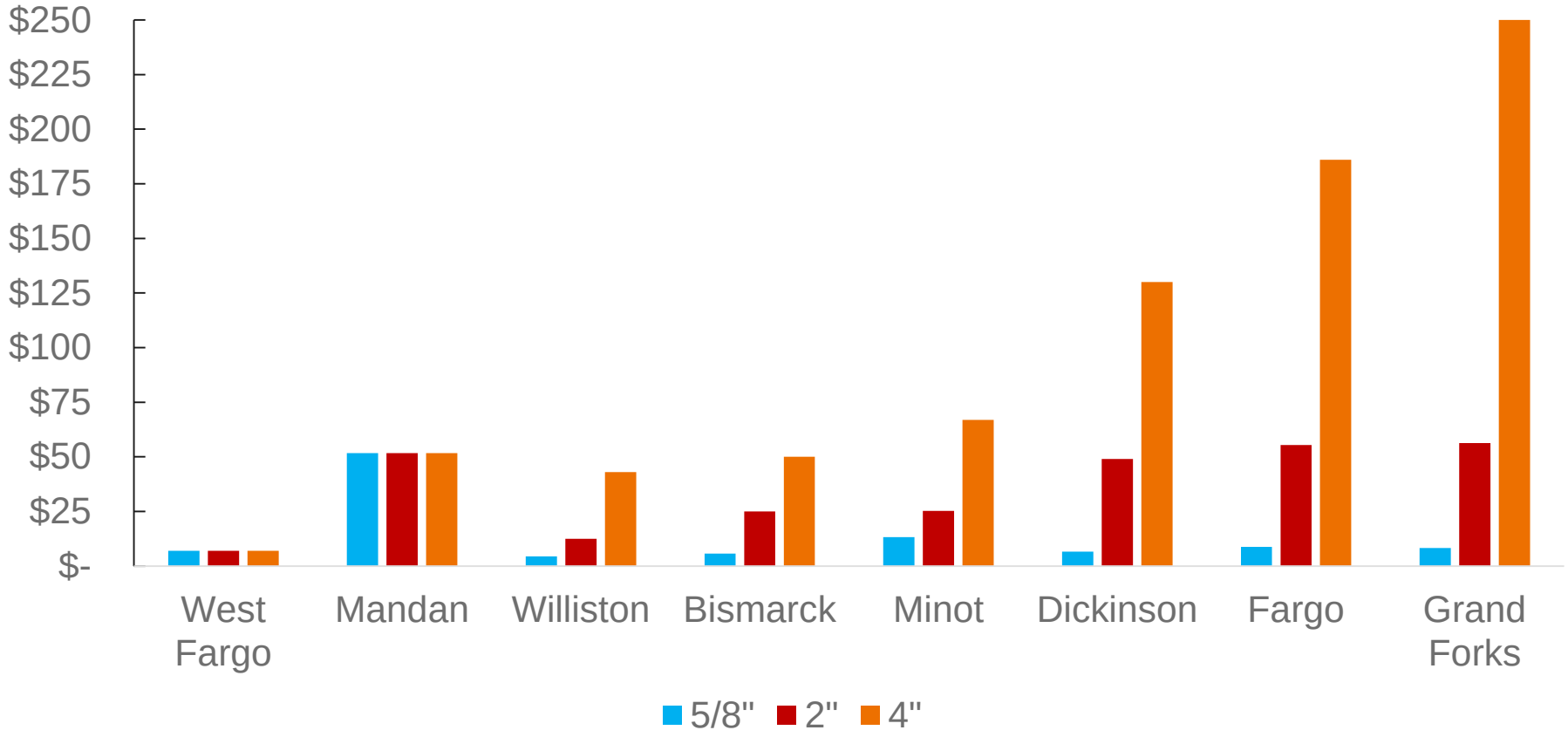
-Account
-Meter size
-Equivalent Residential Unit (ERU)

Basis selected should be consistent with costs recovered

Summary of Local Rates

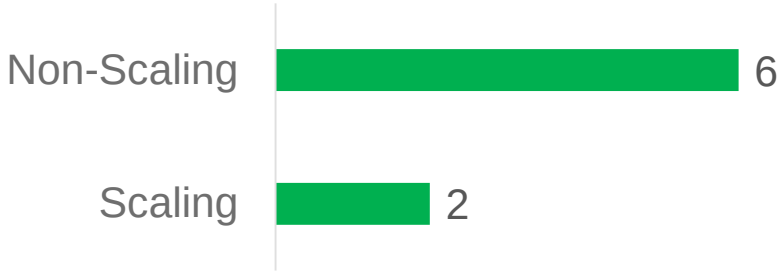
Water Fixed Fees – Non Residential

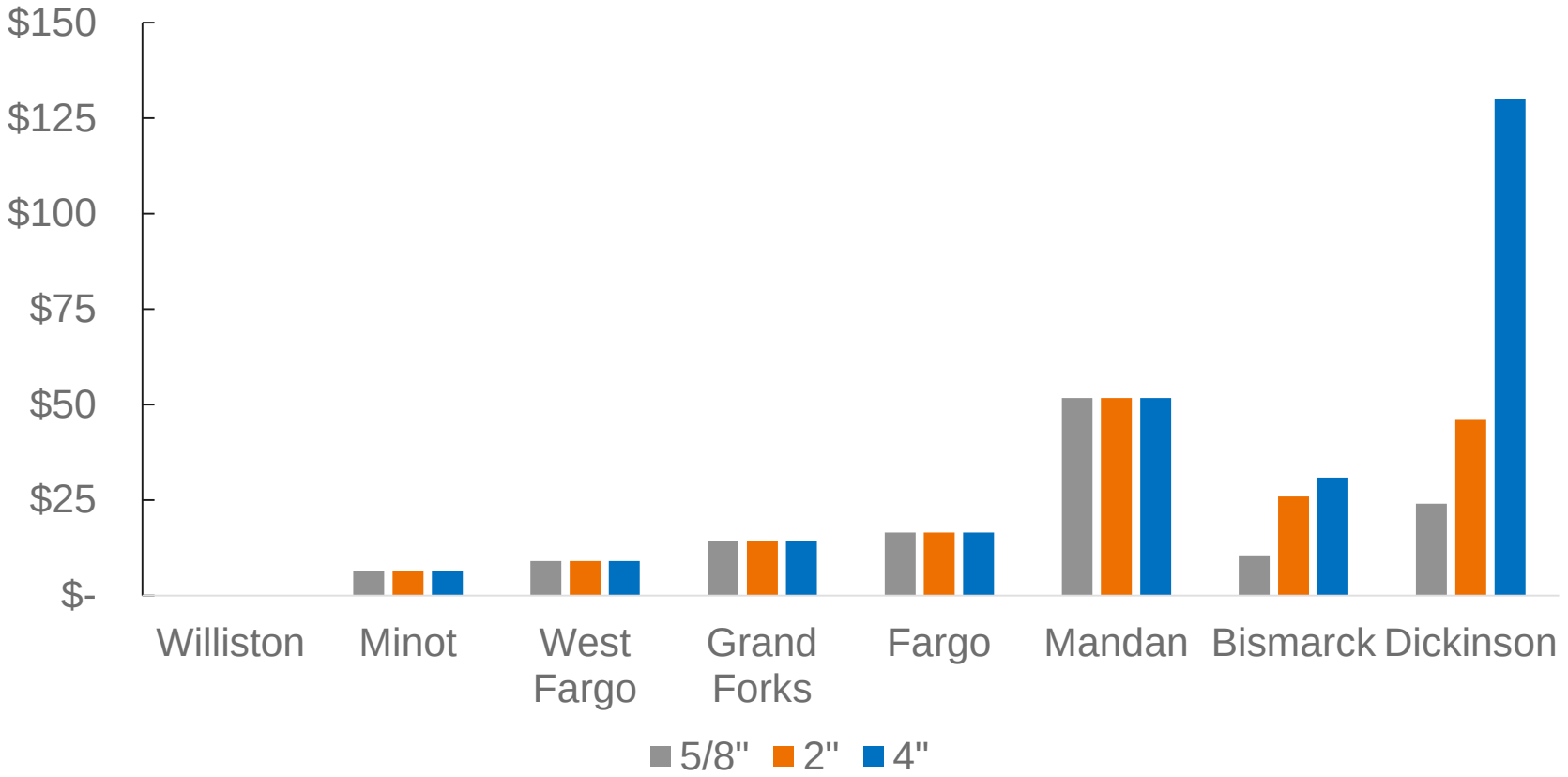




Summary of Local Rates

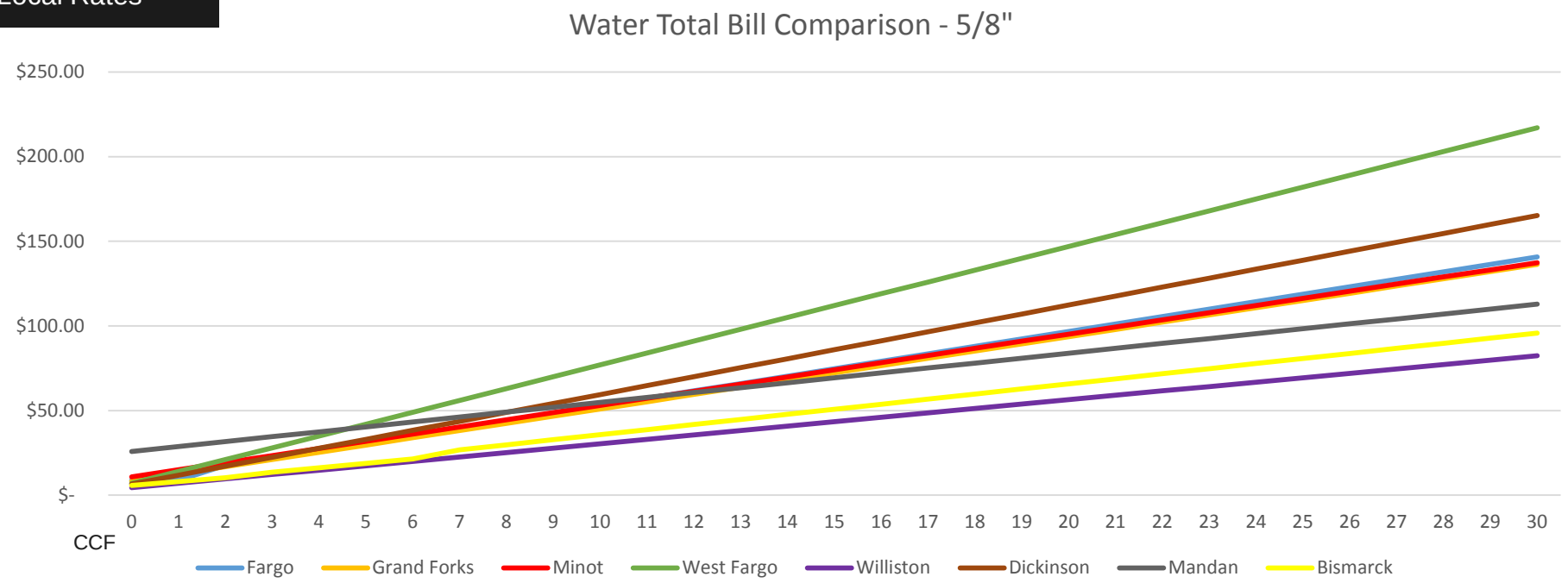
Sewer Fixed Fees – Non Residential





Summary of Local Rates

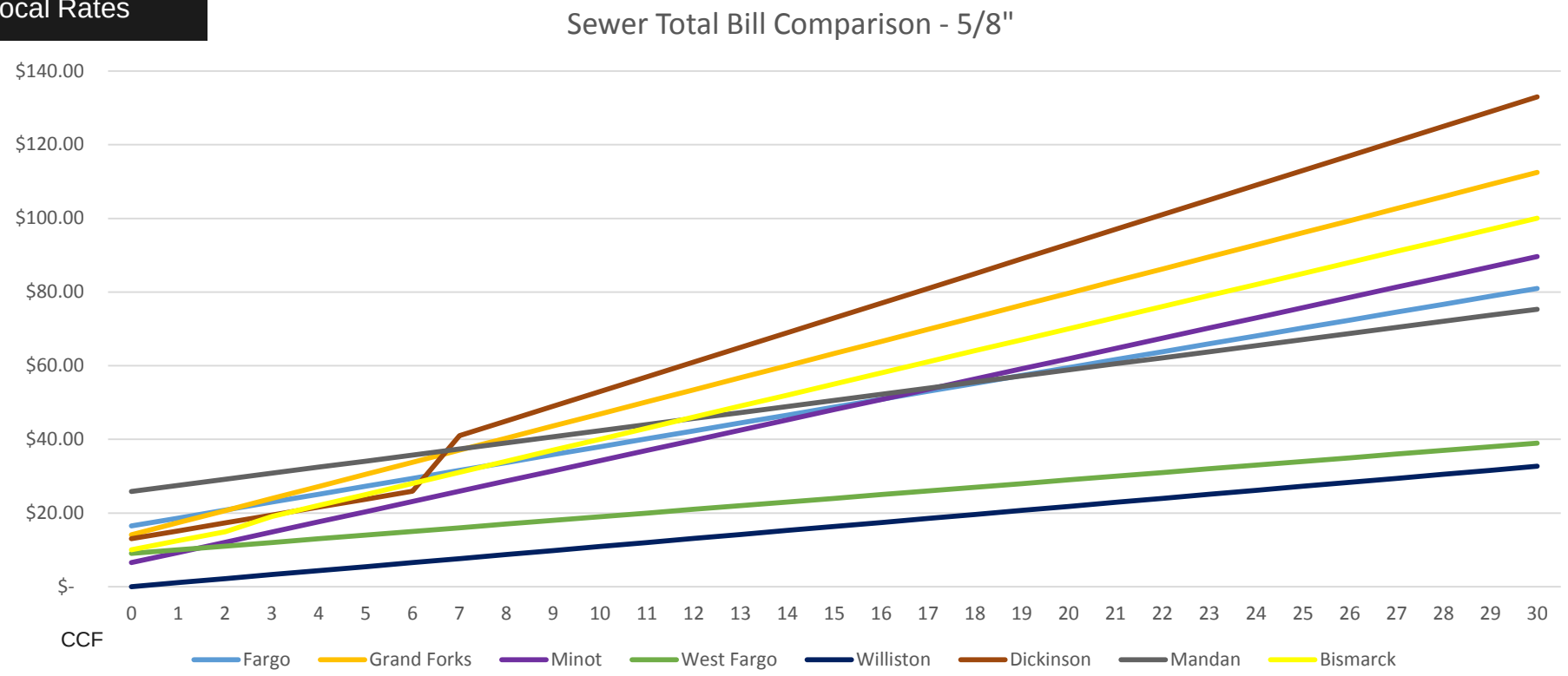
Water Volumetric Rate Structures



Community	1 CCF	2 CCF	3 CCF	4 CCF	5 CCF	6 CCF	7 CCF	30 CCF	267 CCF	2673 CCF
Fargo	Included	$4.40							$4.15	$3.75
Grand Forks	$4.27									
Minot	$4.22									
West Fargo	$7.00									
Williston	$2.60 (Winter) / $4.65 (Summer)							$2.25 (Winter) / $4.30 (Summer)		
Dickinson	$5.29									
Mandan	$2.90									
Bismarck	$2.25		$2.60				$3.00			

Summary of Local Rates

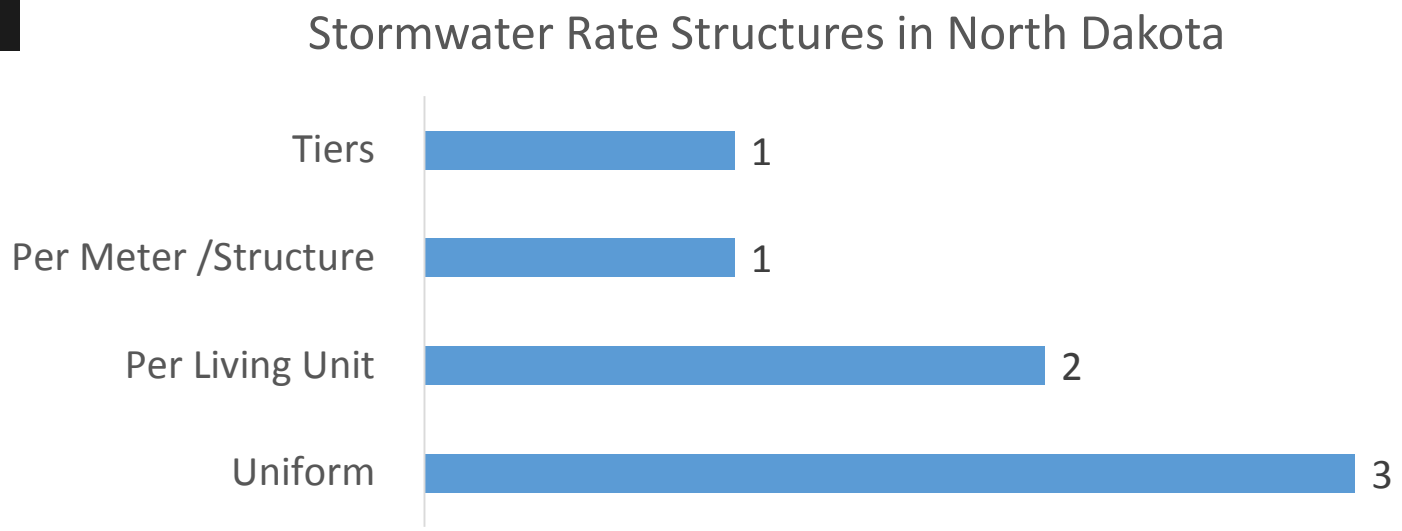
Sewer Volumetric Rate Structures

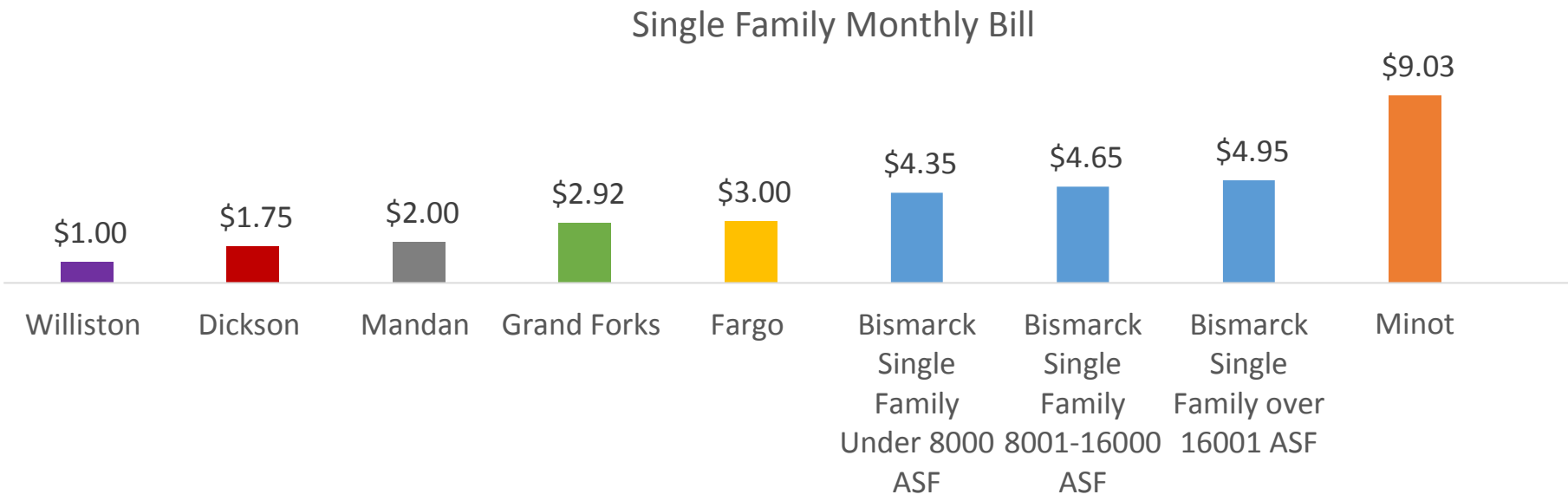


Community	Cap/Average	1 CCF	2 CCF	3 CCF	4 CCF	5 CCF	6 CCF	7 CCF	30 CCF
Grand Forks		$3.28							
Minot		$2.77							
West Fargo		$1.00							
Williston	November - April Average	$1.09							$0.85
Mandan		$1.65							
Fargo		$2.15							
Bismarck	November - April Average	$2.45		$3.00					
Dickinson	5000 gallons in Summer	$2.15						$4.00	

Summary of Local Rates

Stormwater Rate Structures





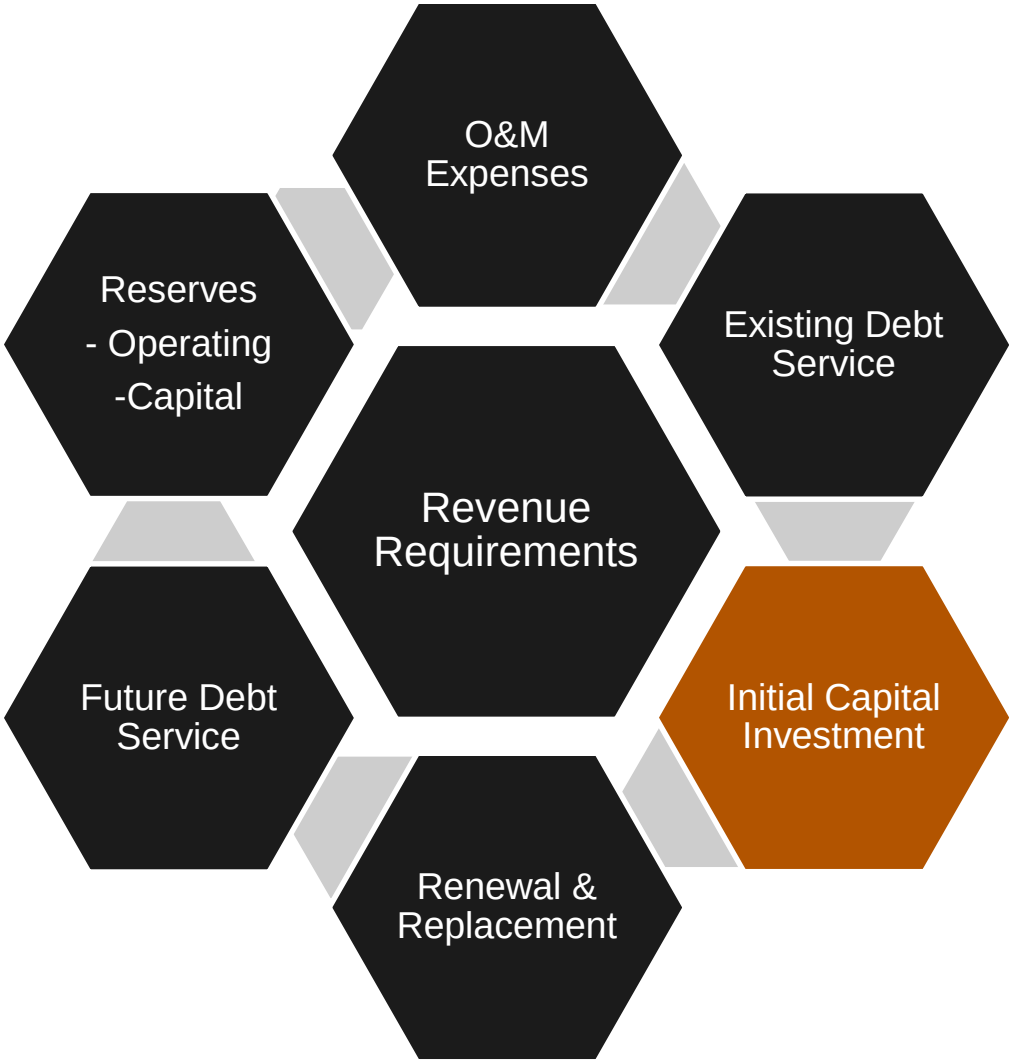
Funding Strategies

Municipal utilities typically stand alone

- Enterprise Fund operations that are self-supporting
  - Rates and fees are set to recover cost of providing service
  - Utilities reimburse General Fund for support services
  - No profit and no subsidy from General Fund
  - Function “as a business”
- Utility rates are user fees rather than taxes, and are designed based on use of/impact on systems
  - Should be cost-based
  - Cannot be arbitrary
- City: separate funds for water, sewer & stormwater

Funding Strategies

Utilities must identify appropriate mechanisms to recover all costs



Typical Funding Options

Rates

Special Assessments

Capacity Charges

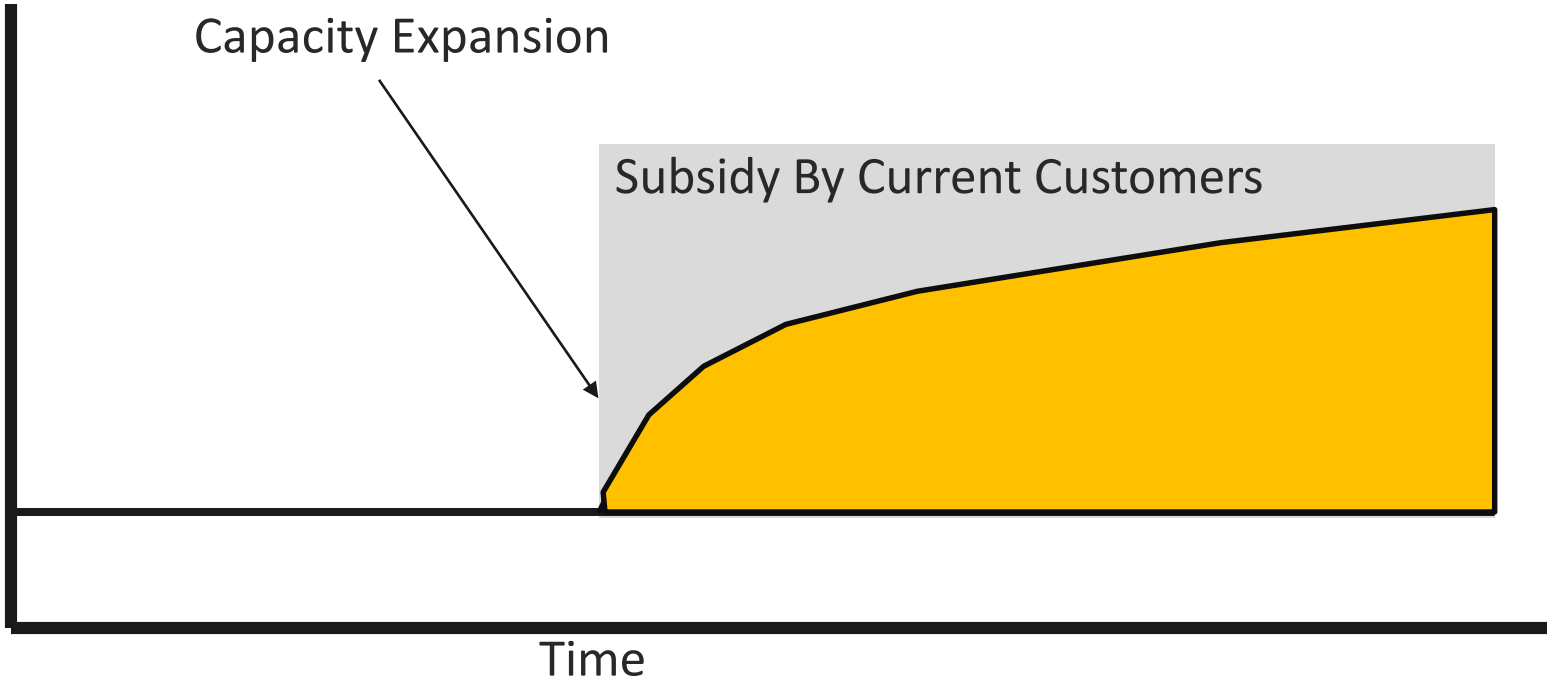
Grants

Common cost recovery mechanisms

	Developers	Rates	Impact Fees	Assessments
Local distribution and collection system assets	Standard	Rare	Rare	Common
Larger water transmission and wastewater conveyance assets	Uncommon – except to achieve schedule objectives and/or facilitate upsizing	Frequently bear part of the costs	Common	Occasionally
Treatment plants and other regional infrastructure	Uncommon	Frequently bear part of the costs	Common	Uncommon
Special services to specific areas, such as sewer extensions to septic tank areas	Uncommon – except to achieve schedule objectives	Frequently bear part of the costs	Rare	Common

The basic challenge

- Infrastructure is expensive to provide
- Long-term revenue from future customers don't always provide adequate funding to recover these costs
- Even if such revenue streams reflect the fully allocated cost of service, the costs of growth can impose significant burdens on existing customers



Industry-standard approaches

Connection fees and other up-front charges

- A tool to recover the costs of providing necessary capacity to serve new development
- Known as impact fees, capacity fees, capital recovery charges, readiness to serve fees, capital contribution fees, capital facility fees, system development charges, system buy-in charges, among other names

Related Fees and Charges

- Such as tap fees and meter fees most frequently recover these up-front, but non-capacity related costs

"The Dunedin Decision"

- CITY OF DUNEDIN v. CONTRACTORS AND BUILDERS ASSOCIATION OF PINELLAS COUNTY, 1975
  - Established the authority to impose impact fees 10+ years before the first state enabling legislation (Texas, 1987)
  - Created a mechanism through which new developments can pay for the infrastructure needs they generate
  - Set fundamental and lasting standards to focus on a proportionate allocation of costs for backbone facilities

"Backbone" capital charges are common nationwide

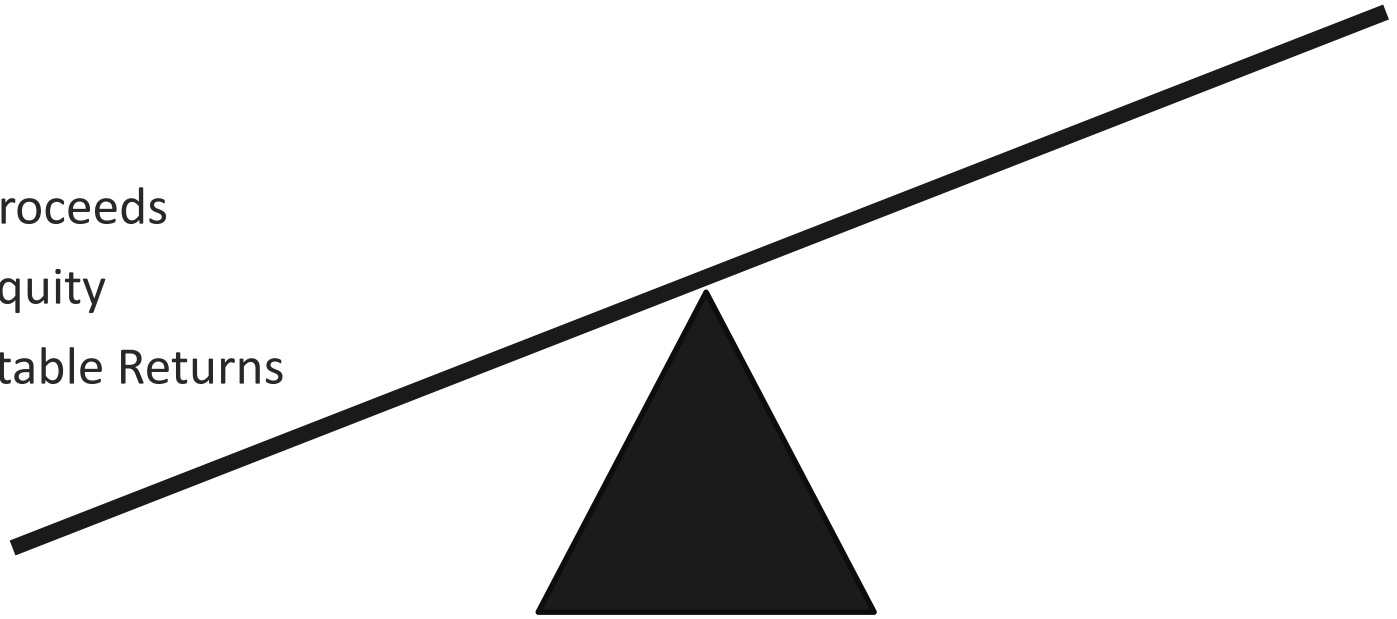
- Impact fees and similar charges are utilized throughout most of the country for water and sewer infrastructure
- Enabling legislation passed in about 30 states
- In many cases, a formally adopted fee structure is seen as an improvement over ad-hoc negotiated agreements, even within the development community

Must consider benefits and costs of alternative capital cost recovery approaches

Implementation Cost

Record Keeping

Administration



Proceeds

Equity

Stable Returns

Limitations of assessments

- Reliance on assessments can limit a City's ability to manage growth effectively
- In the absence of large fund balances in targeted reserve accounts, up-front charges are a critical tool in responding to growth
- A 15 year payback period is an unusually long period for up-front infrastructure
- Uncertainties regarding the timing of growth impose risks on the existing customer base, especially with a reliance on assessments

Impacts of less than full cost charges

- The potential for existing customers who have funded their own necessary infrastructure to bear the costs of providing infrastructure to new areas
- The danger that this subsidy could represent a permanent transfer of wealth with no realistic hope for payback or reciprocal benefit
- A reduction in a local government's ability to plan for and provide infrastructure in a logical and cost-effective manner, and a potential efficiency loss to all customers as a result

Capital cost recovery path forward

- **Establish a plan to engage with interested stakeholders in evaluating alternative cost recovery options available to Bismarck**
- Identify costs and benefits of each option
- For the preferred option(s), identify costs of appropriate types of infrastructure
- Calculate a proportionate share of each per equivalent residential unit or other measure
- Provide an implementation plan to the City

Questions and Answers